

REMARKS

Favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

A typographical error has been corrected in the title which is self-explanatory.

The specification has been amended to reflect the status of this application as a national stage application based upon the counterpart PCT application.

The claims have been amended to more particularly point out and distinctly claim the subject matter of this invention. Specifically, claims 1 and 5 have been amended to delete "or absence" of an acid. Claim 5 has also been amended so as to be dependent upon claim 1.

Claim 7 has been newly added based on Working Examples 1 to 12 in the specification as originally filed. The subject matter of claim 7 is directed to specific chiral catalysts described in Working Examples as shown below.

<u>Working Examples</u>	<u>The chiral catalysts</u>
1	Pd((R)-binap)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
2	Pd((S)-dm-binap)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
3	Pd((R)-binap)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
4	Pd((R)-segphos)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
5 to 10	Pd((R)-binap)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
11	Pd((R)-segphos)(H <sub>2</sub> O) <sub>2</sub> (OTf) <sub>2</sub>
12	Pd((R)-binap)(μ-OH) <sub>2</sub> (OTf) <sub>2</sub>

Claim 1-4 are rejected under 35 USC 112, second paragraph, as being indefinite in the recitation of amino acid derivatives.

Applicants acknowledge with thanks the Examiner's clarification of this rejection.

The  $R^4$  group can replace the -H or -OH group of the -COOH group of the amino acid. For example, the optically active  $\beta$ -amino acid derivative of the formula (2) wherein  $R^4$  is a heterocyclic group is prepared by the replacement of the -OH group with a heterocyclic group of  $R^4$ .

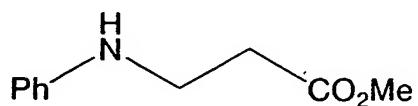
Based upon the telephonic conference with the Examiner, it is believed that this ground of rejection should be overcome.

Lastly, claims 1-6 are rejected under 35 USC 102 as anticipated by Li et al. This ground of rejection is respectfully traversed as applied to the amended claims.

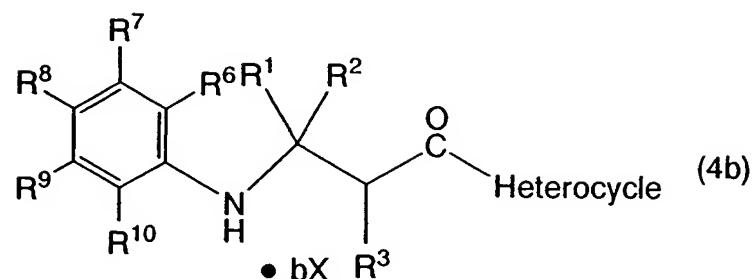
In amended claims 1-5 and 7, an  $\alpha,\beta$ -unsaturated carboxylic acid derivative of the formula (1) is reacted with an amine in the presence of a chiral catalyst and in the presence of an acid.

On the other hand, Li et al. neither disclose nor suggest the hydroamination in the presence of an acid. Li et al. describe on page 250, right column, lines 1-3 that "In this paper, we report a class of dicationic palladium catalysts for the hydroamination of acyclic olefins under pH neutral conditions". Therefore, the subject matter of amended claims 1-5 and 7 is not anticipated by Li et al.

Regarding claim 6, the desired compound of entry 11 described in Li et al. is



On the other hand, R<sup>D</sup> in the compound (4b) is a heterocyclic group which may be substituted. This compound is



Thus, the compound of formula (4b) is structurally different from the compound of entry 11 described in Li et al. Therefore, the subject matter of claim 6 is not anticipated by Li et al.

Unobviousness from Li et al.

The problem to be solved of the present invention is to provide a process for producing an optically active  $\beta$ -amino acid derivative, which gives the desired products in high yields with high optical purities. This problem has been solved by processes for producing an optically active  $\beta$ -amino acid derivative according to amended claims 1-5 and 7 of the present invention.

Particularly, an optically active  $\beta$ -amino acid derivative can be produced in very high yields with high enantioselectivities by reacting an  $\alpha,\beta$ -unsaturated carboxylic acid derivative with an amine in the presence of a chiral catalyst and in the presence of an acid. Thereby both excellent yields and excellent enantiomeric excess can be achieved, as for example shown in Examples 8 and 10 on pages 56 to 58 of the present specification.

Example 8 discloses the reaction of anisidine with 3-crotonyl-1,3-oxazolidin-2-one in the presence of a chiral

palladium catalyst and in the presence of trifluoromethanesulfonic acid. A yield of 96% and an enantiomeric excess of 94% could be achieved.

Example 10 discloses the reaction of aniline with 3-crotonyl-1,3-oxazolidin-2-one in the presence of a chiral palladium catalyst and in the presence of trifluoromethanesulfonic acid. A yield of 89% and an enantiomeric excess of 94% could be achieved.

These excellent yields in combination with excellent enantiomeric excesses are neither disclosed nor suggested in Li et al.

Further, Li et al. neither disclose nor suggest conducting a reaction in the presence of a chiral catalyst and the presence of an acid.

Therefore, the subject matter of amended claims 1-5 and 7 is unobvious over Li et al.

In view of the foregoing, it is believed that each ground of rejection set forth in the Official Action has been overcome, and that the application is now in condition for allowance.

Accordingly, such allowance is solicited.

Respectfully submitted,

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